

The subspecific status of Sardinian Warblers *Sylvia melanocephala* in the Canary Islands with the description of a new subspecies from Western Sahara¹

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Sardinian Warbler *Sylvia melanocephala* is a circum-Mediterranean species with three recognised subspecies (Shirihai *et al.* 2001): *S. m. melanocephala* (S. G. Gmelin, 1789) in southern Europe, the Mediterranean, western Turkey, north-west Africa and Libya, including those from the Canary Islands which were formerly recognised as *leucogastra* (Ledru, 1810); *S. m. momus* (Hemprich & Ehrenberg, 1833) in Syria, Israel and Sinai; with the extinct *S. m. norrisae* Nicoll, 1917, restricted to the oasis of Faiyum in Egypt (Roselaar *in* Cramp 1992). Records from the oases of the central and southern Sahara, and the Sahel, are of migrants or wintering birds (Heim de Balsac 1932, 1951, Niethammer & Laene 1954).

Here we propose that the name *leucogastra* be restored for those birds in the Canaries, despite not being recognised by Shirihai *et al.* (2001), who included these birds within the nominate. They display a series of characteristics that, in combination, separate them from other recognised subspecies, although even within the Canaries variation in plumage and coloration, linked to certain geographical factors, is identifiable (Roselaar *in* Cramp 1992). Consequently, subspecific status for Sardinian Warblers from the Canaries was questioned by Vaurie (1954, 1958), although not by Williamson (1968) or Roselaar *in* Cramp (1992). Furthermore, we describe a new subspecies from Western Sahara, based on five specimens whose mensural data and plumage differ from all other currently recognised subspecies. Finally, we discuss some taxonomic aspects of the subspecies found in the western and eastern parts of the species' range.

Methods

Our work is based on mensural data and an examination of plumage features in museum specimens, namely: 29 and 55 *S. m. melanocephala* from Morocco and Iberia, respectively; 32 *S. m. leucogastra* from the Canaries (Fuerteventura, Lanzarote, Gran Canaria, Tenerife and La Palma); 36 *S. m. momus* from Israel, Egypt, Libya, Jordan and Syria; and nine of the extinct *norrisae* from Faiyum,

¹ The new taxon described here is more or less endemic to the area commonly known as 'Western Sahara'; however, our use of this term does not imply any implicit recognition or not of the international validity of the area's boundaries.

Egypt. The plumage of all other Sardinian Warbler specimens (several hundred) in the collection of the Natural History Museum (NHM), in Tring, was also examined. The following measurements were taken: 1) bill-length to skull; 2) bill depth at the base; 3) maximum wing-chord; 4) distance between the tips of p10 and the longest primary-covert; 5) distance between the tip of p10 and the wingtip; 6) distance between the tip of p7 and the wingtip; 7) tail-length; 8) the roundness of the tail based on the distance between the tips of the outermost and central rectrices; 9) tail-wing ratio; and 10) tarsus-length. Culmen-length, bill depth and tarsus-length were measured with callipers to the nearest 0.01 mm. Wing-length was measured straightened and flattened against a ruler to the nearest 0.5 mm; tail-length from the base to the distal extreme; and the distances between feather tips were measured against a ruler to the nearest 0.5 mm.

ANOVA and Statistical Discriminant Analysis were applied to birds grouped according to subspecies to establish the potential existence of morphometric differentials between these groups. The nominate subspecies was represented by resident birds from Morocco and Iberia, although birds from these areas were treated separately because they differ somewhat in plumage and measurements. Morphological similarities between subspecies were calculated by means of the Mahalanobis distance, a measure of the distance between the centroid of a cluster of factors characterising each subspecies (as determined by measurements) within a multi-dimensional space. The lower the distance between groups the greater morphological similarity; larger distances indicate fewer morphological similarities.

The new subspecies from Western Sahara is represented by four males (a juvenile, 15 May 1955; a first-year, 26 November 1972; a second-year and adult, 17 April 1955) and a female (adult, 3 May 1955), all housed in the Estación Biológica de Doñana (EBD), in Seville.

Revalidation of *S. m. leucogastra*

Williamson (1968) and Roselaar *in* Cramp (1992) considered *S. m. leucogastra* valid on the basis of its smaller size as compared to nominate populations, different markings and coloration (e.g. less white on the inner webs of the outer tail-feathers), rounder wing and different repertoire of rattling nasal calls. Nevertheless, birds from the Canaries display varied plumages, measurements and structure that are linked to geographical factors. Roselaar *in* Cramp (1992) and Shirihihi *et al.* (2001) concluded that such variation is due to ongoing differentiation processes occurring within each subpopulation. One of the most significant is in the coloration of birds from the western Canaries, which is darker compared to birds from the eastern islands; clinal gradients even exist within islands (Roselaar *in* Cramp 1992). Size differences between islands are more complex and a representative study is much needed.

Morphometrics

Despite intra-group variation, birds from the Canaries represent a discrete morphometric group (ANOVA; $F(5.125)$; $P < 0.0001$) separable from all other subspecies (Statistical Discriminant Analysis; $F(45.526)$; $P < 0.001$). In general, those from the Canaries have shorter, more rounded wings, and larger body measurements—tarsus- and culmen-lengths and tail-wing ratio—than other subspecies. Other than birds from the Sahara, they also have comparatively less-rounded tails (Table 1). The Mahalanobis distances (Table 2) indicate that of all the other subspecies, *norrisae* is mensurally closest to *leucogastra*. Most of the body measurements are similar in both subspecies (Table 1) and thus, in terms of the Mahalanobis distances, these two subspecies are close. Nevertheless, there are differences between the two taxa in bill- and tail-lengths, which are greater in *leucogastra* than in *norrisae* (Table 1). The similarity in morphological appearance between *norrisae* and *leucogastra* was remarked by Roselaar *in* Cramp (1992) and these subspecies, along with *melanocephala* from Iberia, are somewhat distant from *melanocephala* from Morocco and birds from the Sahara. On the other hand, *momus* is clearly even more distant.

Plumage

At least two plumage types have been detected: pale and dark. Pale birds have very white underparts and are found on Fuerteventura, Lanzarote and Gran Canaria (the three eastern islands). They recall birds from North Africa (in Morocco, Algeria and Tunisia) and are likewise pale on all of their underparts, lacking any beige or even any slightly reddish tones, and have paler grey upperparts than European birds. The darkest upperparts and underparts (these are slightly beige-coloured) are from Tenerife and La Palma (in the western Canaries; note that none was examined from El Hierro or La Gomera). These plumage types and their relationship to geographical factors were described by Roselaar *in* Cramp (1992).

The considerable variation in some body measurements (see Table 1) and relationship between plumage coloration and geographical factors corroborate the existence of a population complex in the Canaries, as noted by Roselaar *in* Cramp (1992). Within this complex two further trends exist, as documented for other pairs or groups of taxa from the Canaries, namely Common Kestrel *Falco tinnunculus canariensis* and *F. t. dacotiae*, Stone Curlew *Burhinus oedicnemus insularum* and *B. o. distinctus*, Great Spotted Woodpecker *Dendrocopos major canariensis* and *D. m. thanneri*, Chaffinch *Fringilla coelebs* ssp. and Blue Chaffinch *Fringilla teydea*, Blue Tit *Parus caeruleus* ssp., etc., as a result of chronologically different invasions. For Sardinian Warbler, the dark forms probably originate from African populations that occupied the more humid western Canaries during periods of wetter, warmer climate. Likewise, paler populations (closer to present-day North African birds and clearly different from those in Europe) in the drier eastern islands probably originate from more recent colonisation events during the present drier climatic period.

Shirihai *et al.* (2001) recognised this process of differentiation between islands and called for further studies. Nevertheless, they did not take into account the features that separate all Canarian birds from other forms and proposed that they be included within the nominate based on single birds from Lanzarote and southern France with identical sequences in their mitochondrial cytochrome-*b* gene. However, the very low mutation rate of this genetic marker—less than 2% per one million years (Haring *et al.* 1999, García-Moreno *et al.* 1999)—means that it is somewhat less than ideal for work at lower taxonomic levels. Thus, processes of taxonomic differentiation could have taken place (e.g., only a few tens of thousands of years ago during the most recent ice age) without any mutation or fixation in the base sequence of cytochrome *b*. Other genetic markers with greater mutational rates are more valid in such cases (Haring *et al.* 1999). Furthermore, Shirihai *et al.* (2001) sequenced mtDNA from just one bird without specifying whether it was resident or possibly a wintering or migrant individual.

We propose that the subspecific status of *leucogastra* be provisionally restored for all Canarian birds as per Roselaar *in* Cramp (1992) and Williamson (1968), based on its characteristic plumage and morphometrics that separate it from all other subspecies. Nonetheless, a definitive study of the relationship between populations in the Canaries and North Africa (resident Moroccan, Algerian and Tunisian birds) is still needed, including data on body weight and total length, sonograms of songs and calls, and DNA analysis, all of which are beyond the scope of the present contribution.

The appearance of Canarian specimens, apart from measurements, strongly indicates that possibly three populations are involved: smaller dark birds from La Palma (and perhaps elsewhere); larger, dark or intermediate birds on Tenerife; and paler birds, apparently identical to the resident Moroccan population, on the three drier easternmost islands (Gran Canaria, Fuerteventura and Lanzarote). North African birds and the latter population might easily be considered a separate subspecies, but for now we propose to retain *leucogastra* for all Canarian populations and leave resident North African populations in nominate *melanocephala*, with the exception of a new form from the Western Sahara that we propose to name as follows.

***Sylvia melanocephala valverdei* subsp. nov.**

Holotype EBD 19599A, adult female, collected at El Aium de Saquiat (27°10'N, 13°12'W), Western Sahara, on 3 May 1955, by J. A. Valverde.

Paratypes EBD 19594A, first-year male, collected at Tumbas de Edam (23°49'N, 15°52'W), 20 km from Villa Cisneros, Western Sahara, on 26 November 1972, by J. A. Valverde. Weight 12.5 g and gonads undeveloped. Two other males (EBD 19595A, 19596A) are from Sebja Imlilik (23°14'N, 15°56'W), Western Sahara, and were taken on 17 April 1955. Both have developed gonads, and the first is in

second-year plumage and the other adult. A juvenile (EBD 19598A), taken on 5 May 1955 is from El Aium de Saquiat (27°10'N, 13°12'W), Western Sahara. All were collected by J. A. Valverde.

Description of holotype Crown and head-sides uniform brown suffused pale grey; crown feathers with dark grey-brown bases; nape, neck-sides, mantle, back and rump uniform sandy brown, somewhat paler on rump and uppertail-coverts, and darker on ear-coverts; wing-coverts as back; underparts (chin, throat and foreneck) off-white, breast and central belly pale cream, and breast-sides, flanks, thighs, vent and undertail-coverts pale beige. Primaries and upper surface of secondaries grey-brown with pale fringes and tips; alula similar, but with broader pale fringes. Underside of secondaries, underwing-coverts and axillaries buff-brown, almost imperceptibly tinged pink. Uppertail brown, the outermost rectrices having a pale cream outer web and distal third of inner web, grading into brown of feather base; second outermost rectrices brown with a pale cream distal spot *c.*5 mm in diameter and third outermost similar but with a small spot *c.*2 mm in diameter at tip. Bare parts (as noted by the collector): upper mandible dark brown; distal half of lower mandible dark brown and basal half pale yellow; tarsus and toes yellow-brown.

Description of paratypes Crown, head-sides and ear-coverts matt black with some (3–4) juvenile feathers on pileum; rest of upperparts greyish brown, slightly paler on rump and uppertail-coverts; underparts largely white, becoming off-white on breast and belly, and breast-sides and flanks pale grey. Flight-feathers brown, with pale outer webs; alula dark brown with contrasting broader off-white outer webs; underwing-coverts and axillaries pale grey, and underside to secondaries pinkish cream. Uppertail darker with outer web and distal third of inner web of outermost pair white; second outermost pair has distal two-thirds white, the rest dark; three outermost rectrices have a small white mark at tip (all three are retained juvenile feathers). Bare parts: upper mandible uniform dark brown; lower mandible brown with base and cutting edges paler; legs and toes yellowish brown.

Diagnosis Both sexes have bill, wing and tail shorter, tail less rounded and tarsus longer than nominate from North Africa and Iberia (Table 1). Similar in size to *melanocephala* and *leucogastra*; *momus* is smaller and has a shorter tail.

Adult male has cap similar to nominate and *leucogastra*, but matt black, not glossy as in *melanocephala*. Upperparts pale greyish brown with olivaceous tone in some. Overall, noticeably paler (Fig. 1) lacking dark lead grey tones of *melanocephala* and *leucogastra*, or brown suffusion of most *momus* (also present in some male *norrisae*). Primaries and secondaries blackish brown with greyish-brown fringes; pattern on outer rectrices similar to that in *melanocephala* and *leucogastra*; innermost rectrices blackish brown with pale greyish-brown fringes; overall, rectrices and remiges blackish brown like *momus/norrisae*, not blackish grey as *melanocephala* and *leucogastra*; inner webs of secondaries clearly greyish

TABLE 1

Mean values of body measurements among studied groups of *Sylvia melanocephala*. Bill-length; bill depth = height of bill at base; wing-length; p10-pc = distance between tip of p10 and longest primary-covert; p10-WT = distance between tip of p10 and wingtip; p7-WT = distance between tip of p7 and wingtip; RD = distance from tip of central tail-feathers to tip of outermost tail-feathers; tail-wing = ratio tail-length/wing-length; and tarsus length. Figures in brackets relate to number of individuals. (I) = Iberia; and (M) = Morocco.

	Bill			Bill depth			Wing			p10-pc			p10-WT			p7-WT			Tail			Roundness			Tail/Wing			Tarsus		
	X	SD	N	X	SD	N	X	SD	N	X	SD	N	X	SD	N	X	SD	N	X	SD	N	X	SD	N	X	SD	N	X	SD	N
<i>S. m. melanocephala</i> (I)	13.33	0.55	50	3.20	0.14	54	59.65	1.89	52	4.49	1.10	52	30.76	1.74	52	0.31	0.41	52	60.67	2.91	47	10.00	2.03	45	0.94	0.28	51	19.54	0.82	52
<i>S. m. melanocephala</i> (M)	13.14	0.40	28	3	0.17	28	58.90	1.19	29	4.24	1.57	27	31.17	1.79	27	0.49	0.46	27	57.21	6.01	27	10.88	2.53	27	0.91	0.27	29	19.57	1.17	29
<i>S. m. valverdei</i>	12.84	0.53	5	3	0.16	5	58.02	0.94	5	3.64	0.68	5	30.58	1.03	5	0.46	0.11	5	55.96	1.13	5	7.04	1.20	5	0.96	0.02	5	19.64	0.52	5
<i>S. m. leucogastra</i>	13.52	0.96	29	3.15	0.18	18	56.64	2.03	32	5.88	1.24	30	28.51	1.97	30	0.68	0.70	32	58.26	2.12	32	8.40	1.74	31	1.03	0.04	32	19.94	1.03	32
<i>S. m. norrisae</i>	12.72	0.43	9	3.03	0.16	9	56.76	0.83	9	6.54	1.29	9	28.68	1.87	9	0.58	0.66	9	56.28	2.64	9	8.43	1.80	9	0.99	0.04	9	19.79	0.74	9
<i>S. m. momus</i>	12.41	0.63	24	2.97	0.18	21	55.42	1.96	27	4.46	1.33	27	29.42	1.69	26	0.25	0.40	26	54.01	2.02	25	8.54	1.19	25	0.90	0.26	27	19.27	1.11	27

brown, not pale grey as *melanocephala* and *leucogastra*. Throat and breast pure white, lacking the almost imperceptible creamy tinge of *momus* (even rosy in some *momus* and most *norrisae*); lacks grey wash on throat and upper breast of Iberian *melanocephala*, whilst Moroccan *melanocephala* is noticeably white like *leucogastra*. Breast-sides and flanks grey as most *momus* (lacking the buff-pinkish cast of most *norrisae* and some *momus*), albeit more intense and extending nearer central breast than in *melanocephala* and *leucogastra*; lower breast and belly uniformly pure white (the collector recalls a pinkish flush in fresh plumage), lacking the buff tones of *momus* (in Iberian *melanocephala* white restricted to central lower breast and belly) and lacking diffuse grey of *leucogastra*; dark areas on flanks smaller and paler than in *melanocephala* and *leucogastra*; greyish-white thighs, not ash-grey of *melanocephala* and *leucogastra*, and whiter than *momus* becoming buff-coloured closest to tibia, not dark brown as in *melanocephala*, chestnut of *leucogastra* or sandy in *momus/norrisae*. Undertail-coverts pure white, lacking pinkish tone of *momus/norrisae* or grey of *melanocephala* and *leucogastra*; tail-feathers broader and more rounded than in *momus*.

Adult female has crown and head-sides sandy brown almost imperceptibly washed grey, but no marked contrast with rest of upperparts. Neck-sides, nape, mantle, wing-coverts, back and rump pale brown, not deep olivaceous brown as in Iberian *melanocephala* (greyer in the Maghreb) and *leucogastra*, or sandy brown as in

momus (*valverdei* has palest upperparts of all subspecies and populations examined); flight-feathers and rectrices as male; white throat as *momus/norrisae*, *leucogastra* and *melanocephala* (Maghreb), but Iberian *melanocephala* off-white. Underparts creamy white, more sandy on flanks, unlike buffish breast and flanks of *momus* or off-white central underparts and greyish flanks of *leucogastra* and *melanocephala* from the Maghreb. Iberian *melanocephala* has much darker



Figure 1. Dorsal and ventral views of males of *Sylvia melanocephala*: (1) *S. m. momus* (grey form, NHM 1934.1.1.4810; Jericho, Palestine, November); (2) *S. m. norrisae* (rufous form, NHM 1935.1.15.18; Egypt, March); (3) *S. m. valverdei* (EBD 1959.4A; adult, Dakhla, Western Sahara—under Moroccan administration, November); (4) *S. m. melanocephala* (NHM 1965H.13.990; Essaouira, Morocco, October); (5) *S. m. leucogastra* (NHM 1920.10.30.57; Lanzarote, Canaries, November); and (6) *S. m. melanocephala* (NHM 1965M.19.003; Gibraltar, March).

TABLE 2

Mahalanobis distance values among studied groups of *Sylvia melanocephala* according to body measurements. (I) = Iberia; and (M) = Morocco.

	<i>melanocephala</i> (I)	<i>melanocephala</i> (M)	<i>valverdei</i>	<i>leucogastra</i>	<i>norrisae</i>	<i>momus</i>
<i>melanocephala</i> (I)	0	1.95	5.22	5.28	9.60	13.99
<i>melanocephala</i> (M)	1.95	0.00	5.27	6.43	7.62	9.23
<i>valverdei</i>	5.22	5.27	0.00	6.61	8.08	7.18
<i>leucogastra</i>	5.28	6.43	6.61	0.00	4.88	12.19
<i>norrisae</i>	9.60	7.62	8.08	4.88	0.00	5.27
<i>momus</i>	13.99	9.23	7.18	12.19	5.27	0.00

underparts. Overall, distinctly more sandy brown and paler than female *melanocephala* and *leucogastra*, and less rufous than *momus*.

Juvenile is similar to adult female and is the palest of all forms. Upperparts sandy brown; throat and central belly white; upper breast buff, darker brown on sides; remiges and tail brown with pale buff fringes. The only available specimen of *S. m. norrisae* has a paler, rufous-brown back, and white underparts with flanks and breast suffused buff (Roselaar in Cramp 1992). *S. m. momus* is slightly more rufous than *valverdei*. Closer in coloration to Canarian individuals. *S. m. melanocephala* is darker grey olive-brown above with a greyish breast and darker olive-grey sides; remiges and rectrices black.

Measurements

S. m. valverdei is separated morphometrically from all the other groups: ANOVA; $F(5.125)$; $P < 0.0001$; discriminant analysis $F(45.526)$; $P < 0.0001$. Individually, all body measurements except tarsus ($P < 0.3$) show significant values ($P < 0.01$). The Mahalanobis distances (Table 2) locate *S. m. valverdei* closer to *S. m. melanocephala* from Iberia and Morocco and *leucogastra* than to *norrisae*, and it is clearly distant from *momus*. *S. m. valverdei* has a more square-ended tail and the smallest distance of all subspecies between the tips of p10 and the longest primary-covert. Structurally, *valverdei* has a proportionately longer tarsus than nominate from Iberia and Morocco, which have broader bills, and longer bills and tails. *Valverdei* is similar to *norrisae*, with a longer and more rounded tail, and slightly shorter wings and bill. However, it contrasts with *leucogastra*, which has a larger and more robust bill and tarsus, and shorter more rounded wings. Overall, *valverdei* is noticeably larger than *momus* (Table 1).

S. m. valverdei is a well-defined form with plumage structure and morphometrics that differ from all other subspecies. The specimens of *valverdei* studied by us are from the coastal region of Rio de Oro and Saquiat Al-Hamra, in the north and south of Western Sahara, respectively; no cline is apparent.

Etymology We take pleasure in recognising the work of José Antonio Valverde who discovered this form, collecting both the holotype and paratypes. The founder of the Doñana Biological Station and Doñana Biological Reserve and its scientific collection, Valverde produced many works of zoological interest, including one on the birds of Western Sahara (former Spanish Sahara).

Distribution From southern Morocco (Tiznit) along the Anti-Atlas coastline as far as Taghicht and Jbel Guir, thence upstream along the Oued Draa to Guelta Zerga, and on the Western Saharan coast in a 50 km-wide strip as far as the Tropic of Cancer. Heim de Balsac & Heim de Balsac (1954) considered the species to be an indicator of the modifying influence of the Atlantic on desert environments. Valverde states that it may breed in stands of *Tamarix* in the Adrar, in Mauritania, and those seen in parts of northern Mauritania and thought to be migrants may be resident; the same author also believed that it might occur in neighbouring Algeria. Heim de Balsac (1930) collected one (unsexed) bird in March at Chenachane (26°0'N, 00°15'W), south-east Algeria, 900 km east of the paratype region. Owing to its intermediate plumage between male and female and its smaller size than the nominate, its identity was not ascertained. Valverde (1957) doubted that Sardinian Warbler breeds in this part of Algeria given its arid nature and the lack of suitable habitat. In Western Sahara, Sardinian Warbler occurs continuously from the north as far south as Cap Bojador, at which point *Rhus* scrub formations disappear; further south only scattered pockets of such habitat survive.

Habitat According to Valverde (1957), Sardinian Warbler occurs in three habitats in Western Sahara: in *Euphorbia* and *Opuntia inermis* formations; clumps of *Tamarix* and *Nitraria* mixed with *Salicornia*; and in 'graras' of the coastline around Dora and Aium. 'Graras' are depressions where soils give rise to thickets of vegetation growing in concentric circles—due to the moisture gradient of the soils—in the following order (outermost first): *Euphorbia*, saltworts, *Rhus* and grasses in the centre. Sardinian Warbler is the most constant and abundant species in such habitat in Western Sahara (Valverde 1957).

Breeding Heim de Balsac & Heim de Balsac (1954) commented that breeding activity peaks in April–May. Valverde (1957) mentioned that females were incubating in mid April, that chicks fledge early June and that by mid June the season is over.

Taxonomy of North African populations of *Sylvia melanocephala*

Separation of Iberian and North African populations of *S. m. melanocephala*
The Iberian population is very uniform in size and plumage within each sex and age category throughout its range. No clinal size variation was detected from north to

south Spain. Clear differences are visible between birds from southern Iberia and northern Morocco. In terms of plumage coloration and biometrics, both populations accord with birds from the rest of Iberia and North Africa, respectively.

The resident North African population is also very uniform. Males have purer grey upperparts (paler than Iberian birds) and, above all, very white throat, breast, belly and vent, with grey flanks (Fig. 1). Upperparts in females are clearly less brown (being greyer), and, like males, also have predominantly very white underparts, with grey flanks, that also differ from Iberian populations. Specimens from Tunisia, Algeria and Morocco (as far as Essaouira) are similar to *leucogastra* from the eastern Canaries.

***Momus/norrisae* complex**

Momus and *norrisae* show common, well-defined plumage and morphometric features that separate them from all other recognised subspecies, suggesting that they have attained allospecies status and that further study is necessary to clarify the precise differences between them (Shirihai *et al.* 2001). Plumage features indicate that *momus* and *norrisae* are closely related and separate from other North African forms. *Momus* displays obvious variation in coloration, although to what extent is not known in detail. Birds with both grey and with sandy backs appear, although far more males with grey backs are available in NHM (Fig. 1), agreeing with the typical description of this subspecies, and fewer with warmer, sandy tones (regardless of the state of wear). Roselaar *in* Cramp (1992) mentions that in *momus* male upperparts are dark or medium grey in fresh plumage and in first-years the upperparts are tinged grey-brown. Nevertheless, we have found both types of coloration in fresh-plumaged males older than one year. Specimens of *norrisae* in NHM, all males, have variable coloration, although birds with sandy backs, some even with reddish tones (Fig. 1), outnumber those with grey backs. The type specimen has a grey back. In direct comparison, the plumage of birds of both subspecies, either within sandy/reddish-backed individuals or within greyish-backed ones, is otherwise quite indistinguishable.

Morphometric analysis and the data in Table 1 show that *momus* is very different from North African populations both in size and structure. Likewise, the morphometric proximity (Table 2) of *momus* and *norrisae* compared to other groups is also evident.

Like Shirihai *et al.* (2001), we believe that *Sylvia melanocephala* should be considered a superspecies comprising two allospecies, *S. melanocephala* and *S. momus/norrisae*, in line with the other examples given by the same authors in their recent monograph of the genus *Sylvia*.

We conclude that both populations belong to a single form, *momus*, and that *norrisae* is not 'a highly characteristic' form, as stated by Shirihai *et al.* (2001), given that the only available (small) sample of males possesses similar colour variation to *momus*. Slight morphometric differences between *momus* and *norrisae* coincide with those found between *valverdeilleucogastra* and *melanocephala* and

are doubtless related to the more isolated and sedentary character of the populations in the Canaries, coastal Sahara and Faiyum oasis. The consistency of *norrisae* as a subspecies distinct from *momus* is much more questionable than that of *leucogastra* with respect to *melanocephala* from Europe, North Africa and Anatolia.

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CORRIGENDA

In *Bull. Brit. Orn. Cl.* 125 (1), on p.73 the Y (vertical) axis label was 'masked' and the notations 'CD' and 'RSS' within the figure should read 'CB' and 'RSA' respectively. Y data positively correlated bill against wings and tail, and X data positively correlated wing, bill and tail. In Figure 7, on p.74, the X and Y data are the same as in Figure 6, and the Z data are positively correlated with wing and tail and negatively correlated with bill.